



# The Danish microbiology database

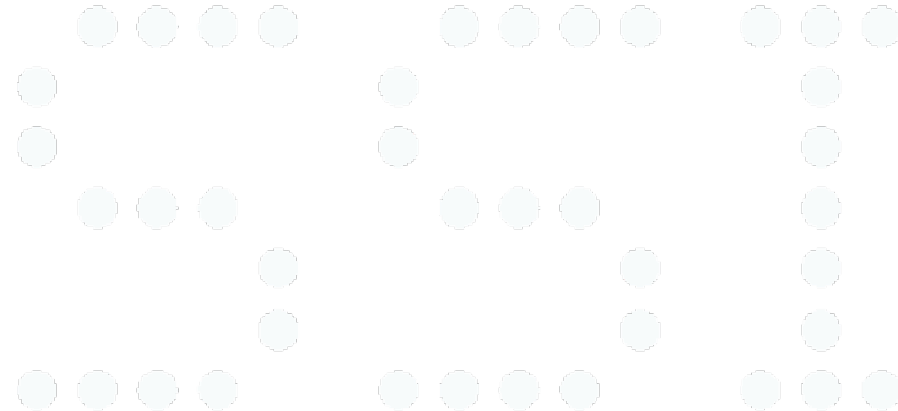
**Amsterdam 2014**

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Dept. of Infectious Disease Epidemiology,  
Statens Serum Institut,  
Copenhagen, Denmark

# OVERVIEW



- The visions
- The basic principles of MiBa
- Datamodel and coding
- Perspectives for use of SNOMED CT in MiBa



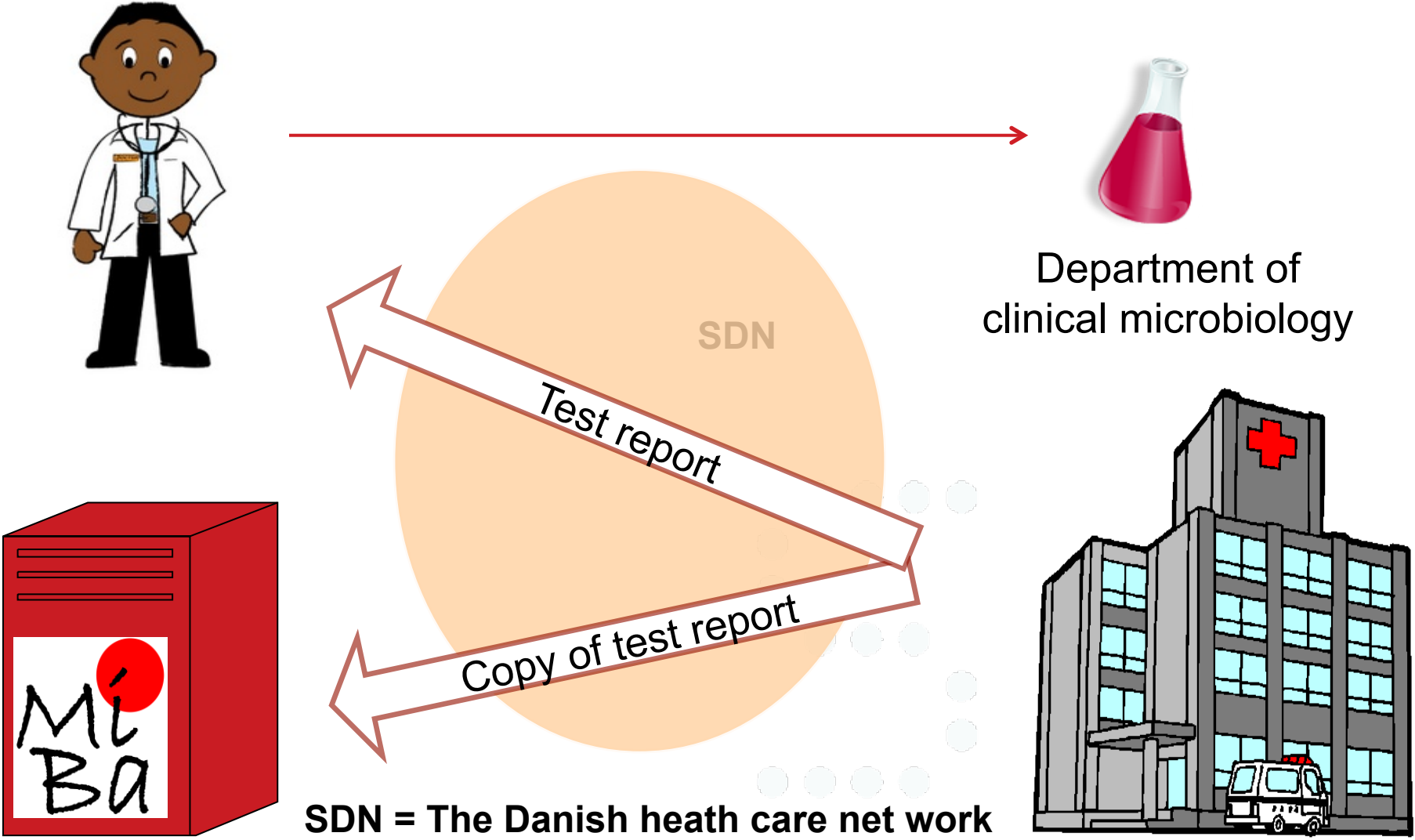
# THE PRIMARY VISIONS FOR MIBA

- Nationwide sharing of patient reports on microbiological test results.
- A new national surveillance system for infectious diseases and microorganisms:
  - automatic, flexible and real time.
- A database for research and quality assessment projects.

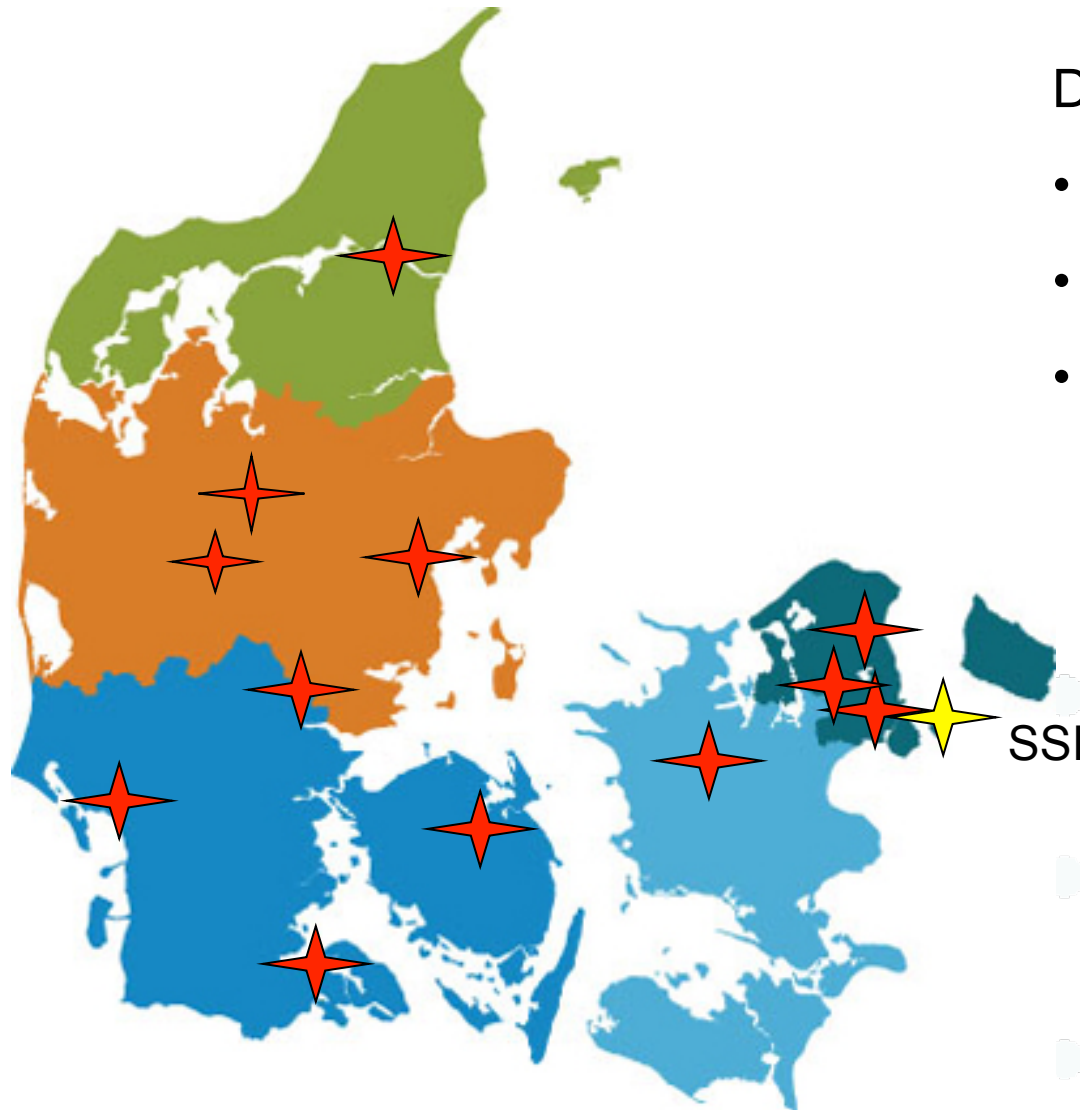
# MIBA IS A COLLABORATION BETWEEN

- ❖ **All Danish Microbiology Departments**
- ❖ **Suppliers of Laboratory information systems**
  - Autonik AB
  - MADS
- ❖ **Statens Serum Institut**
  - Microbiology and Infection Control
  - Virology Surveillance and Research
  - **Department of Infectious Disease Epidemiology**
  - National Sundheds IT (NSI)
- ❖ **MedCom**
- ❖ **The Ministry of Health**

# BASIC PRINCIPLES OF MIBA



# DEPARTMENTS OF CLINICAL MICROBIOLOGY IN DENMARK



Different

- IT-systems
- data structure
- coding

SSI

Statens Serum Institut  
(The National Public Health Institute)

Regions formed in 2007

# ACCES TO MICROBIOLOGICAL TEST REPORTS

## Before MiBa

- No sharing of test reports between hospitals or GPs

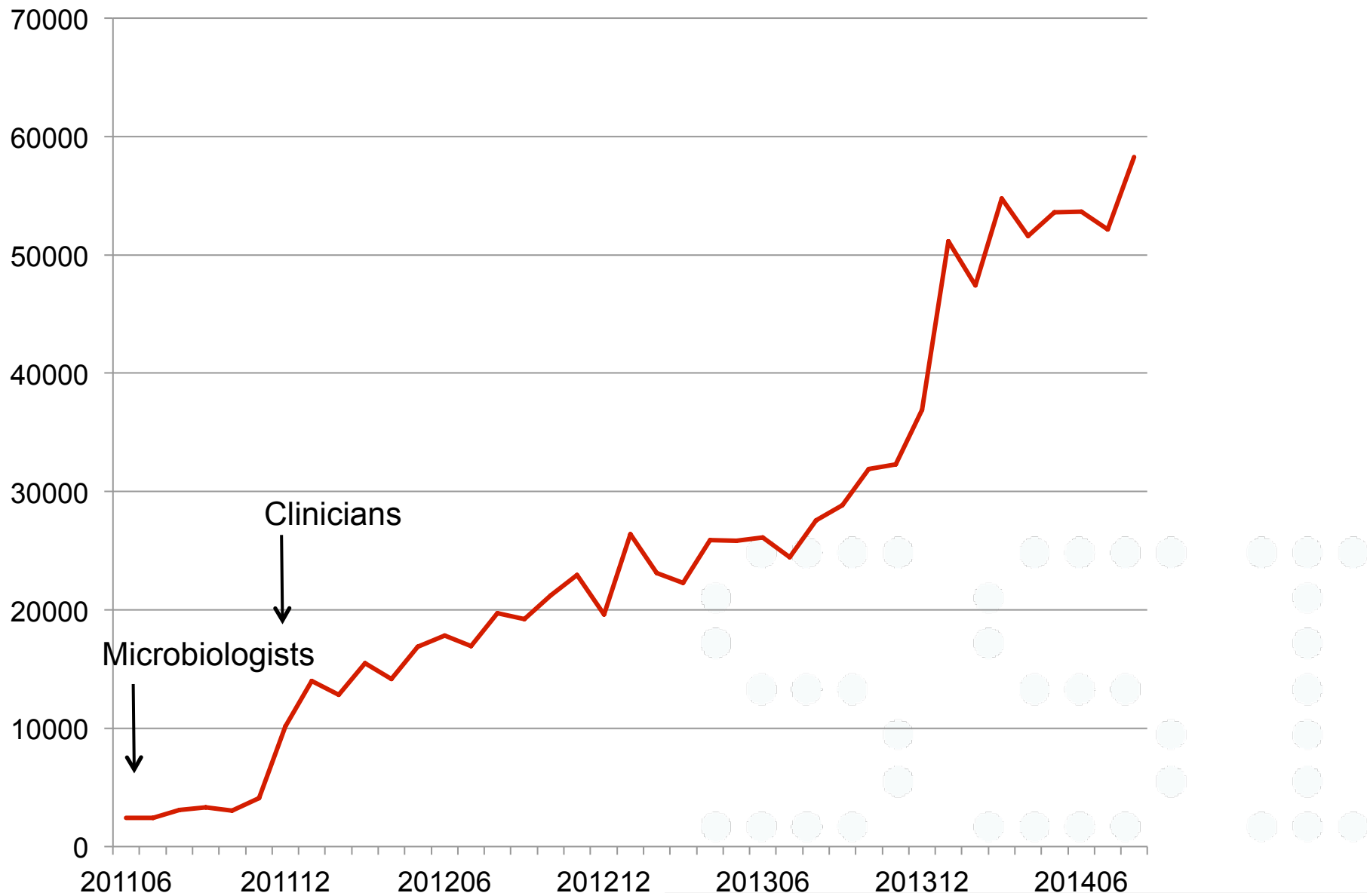


## After MiBa

- Nationwide access to all test reports



# LOOK UPS (OF INDIVIDUAL PATIENTS) IN MIBA PER MONTH





# NATION WIDE ACCES TO ALL TEST REPORTS



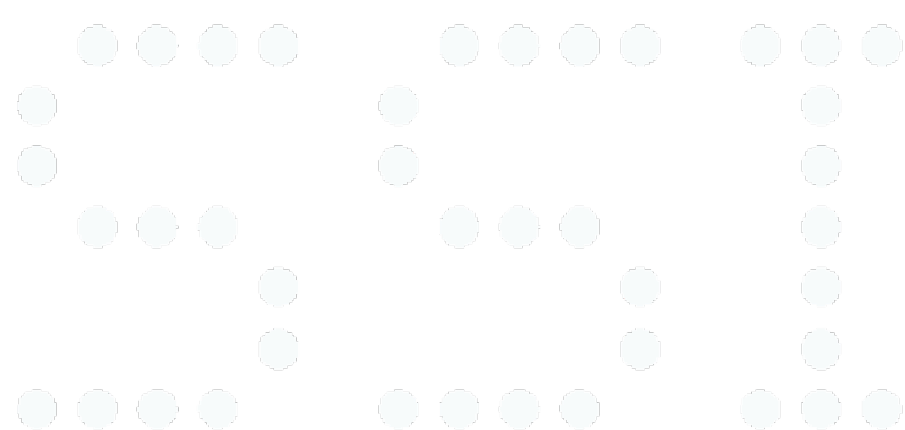
In MiBa:

**14 millions records**

accumulated from Jan 2010 - Oct 2014

The Danish population: 5,5 million

# NATIONAL SURVEILLANCE



# NATIONAL SURVEILLANCE AS IS – (BEFORE MIBA)

Based on  
manual  
workflows



**ANMELDELSER**  
I henhold til lov nr. 1113 af 2004 om  
mod smittebærende AMT

formodt smittet på smittebærende  
 ja  nej

1. NAVN: \_\_\_\_\_

ADRESSE: \_\_\_\_\_

2. ARBEJDSSTED OG BESKÆFTIGELSE (for børn, angiv forældreens): \_\_\_\_\_

3. SKOLE- / BØRNEINSTITUTIONER, som patienten selv har kontakt til: \_\_\_\_\_  
som hovedlærers øvrige medlemmer har kontakt til: \_\_\_\_\_

4. ANDRE INSTITUTIONER, som patienten har kontakt til (dag- og døgninstitutioner, kretsløbscenter m.v.): \_\_\_\_\_

5. SYGDOMMEN BEVINDT, dato: \_\_\_\_\_ Sygdom og alder: \_\_\_\_\_

6. ANMELDELSER TIL INFECTIOEN (eller SVULST) (begge dele)  
For INDLAGTE: Indsendelsesdato: \_\_\_\_\_

Diagnose: \_\_\_\_\_

7. Er patienten indvandringsflytning?  ja  nej  ja, hvornår: \_\_\_\_\_  
Indrejse år: \_\_\_\_\_  
For børn/unge < 25 år født i Danmark angiv da, hvornår begge forældre er danske: \_\_\_\_\_  
 ja  nej, hvornår: \_\_\_\_\_

8. Formodt smittebærende land: \_\_\_\_\_  
Relevant udlandsophold, land(e): \_\_\_\_\_  
Hvorfor: \_\_\_\_\_

9. SMITTEFORHOLD: Formodt smittebærende, herunder smittebærende, smittebærende samt hvornår tilfældet er et del af et udbrud. Kilde m.v.: \_\_\_\_\_

10. AKTUELLE LABORATORIERESULTATER (se bilagene):  
Laboratorium: \_\_\_\_\_  
Provedato: \_\_\_\_\_  
Prøvetypen: \_\_\_\_\_  
 Påvist agens ved mikroskop  
 Påvist agens ved dyrkning  
 Påvist antigen eller nukleinsyre  
 Påvist specifikke antistoffer ved akut/kronisk tryktest

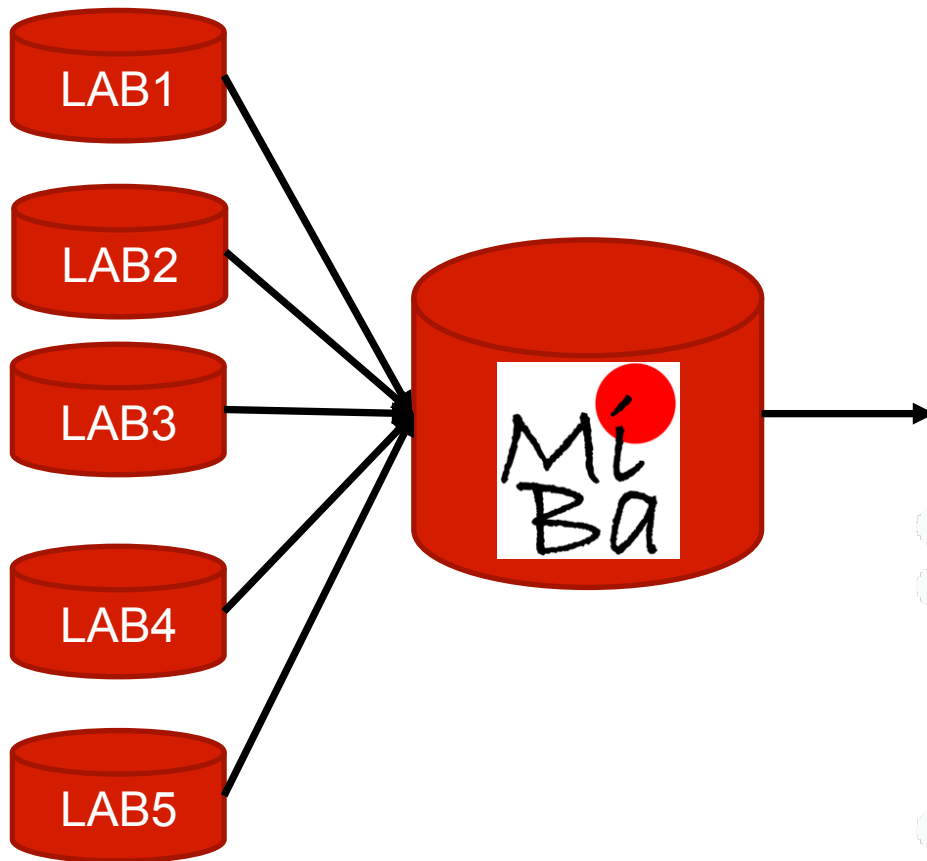
11. Oplysninger om relevant vaccination og anden profylakse (fx serumglobulin eller antitoxin): \_\_\_\_\_

Dato, underskrift: \_\_\_\_\_  
Bilag 1 (uden navn, adresse)

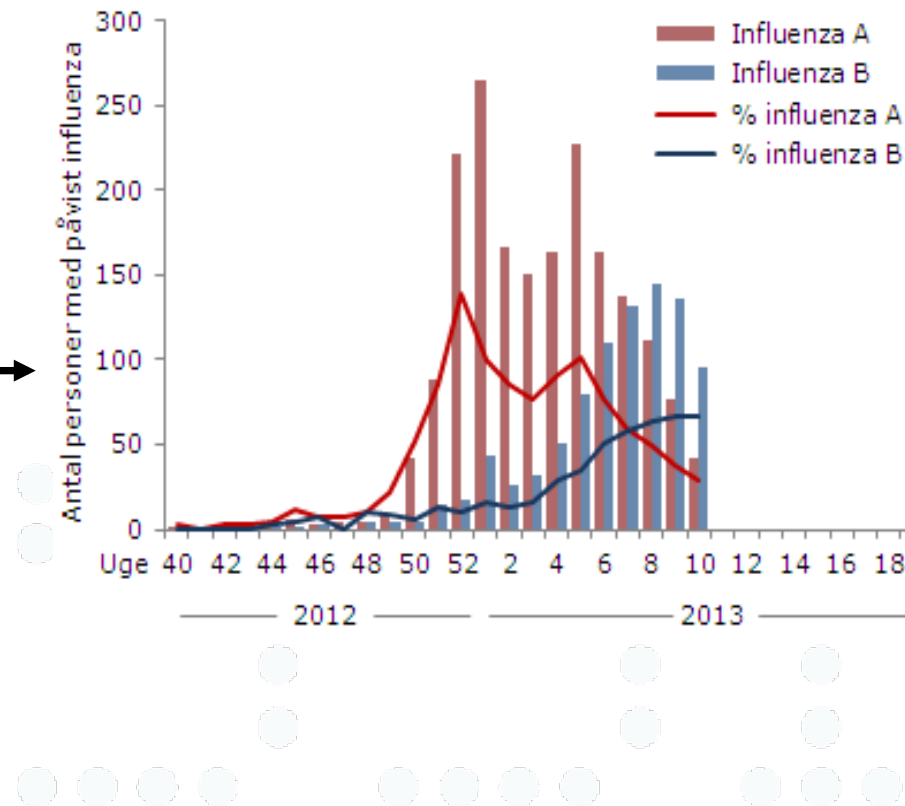
Denne forside indsendes til Epidemiolegisk afdeling, Statens Serum Institut

**Eksempel**

Automatic real time data transfer and analysis



## Lab confirmed influenza



# WHAT IS SPECIAL ABOUT MIBA DATA??

- ❖ Complete data at a national level
- ❖ Real time data
- ❖ Both positive and negative test results
- ❖ All data are personalised (contain the unique CPR number)
- ❖ Can be linked to other public registries
- ❖ No extra burdens of reporting for the laboratories or health care workers

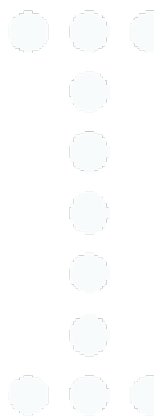
# HOW DIFFICULT CAN THIS BE.....



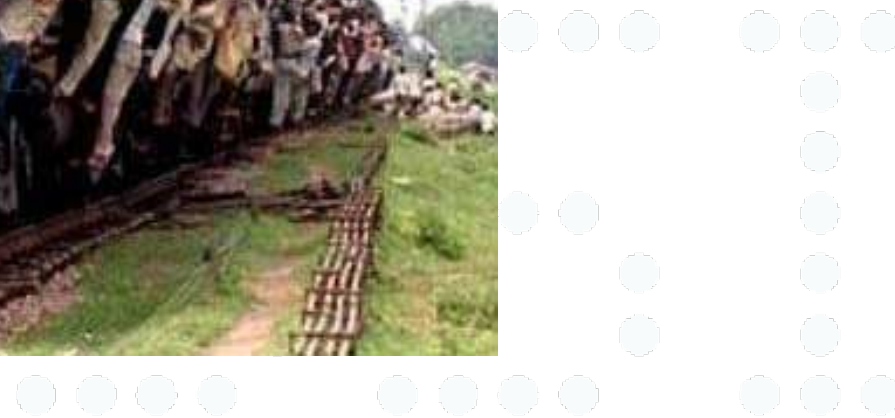
Your plan



Reality



# DATA TRANSFER

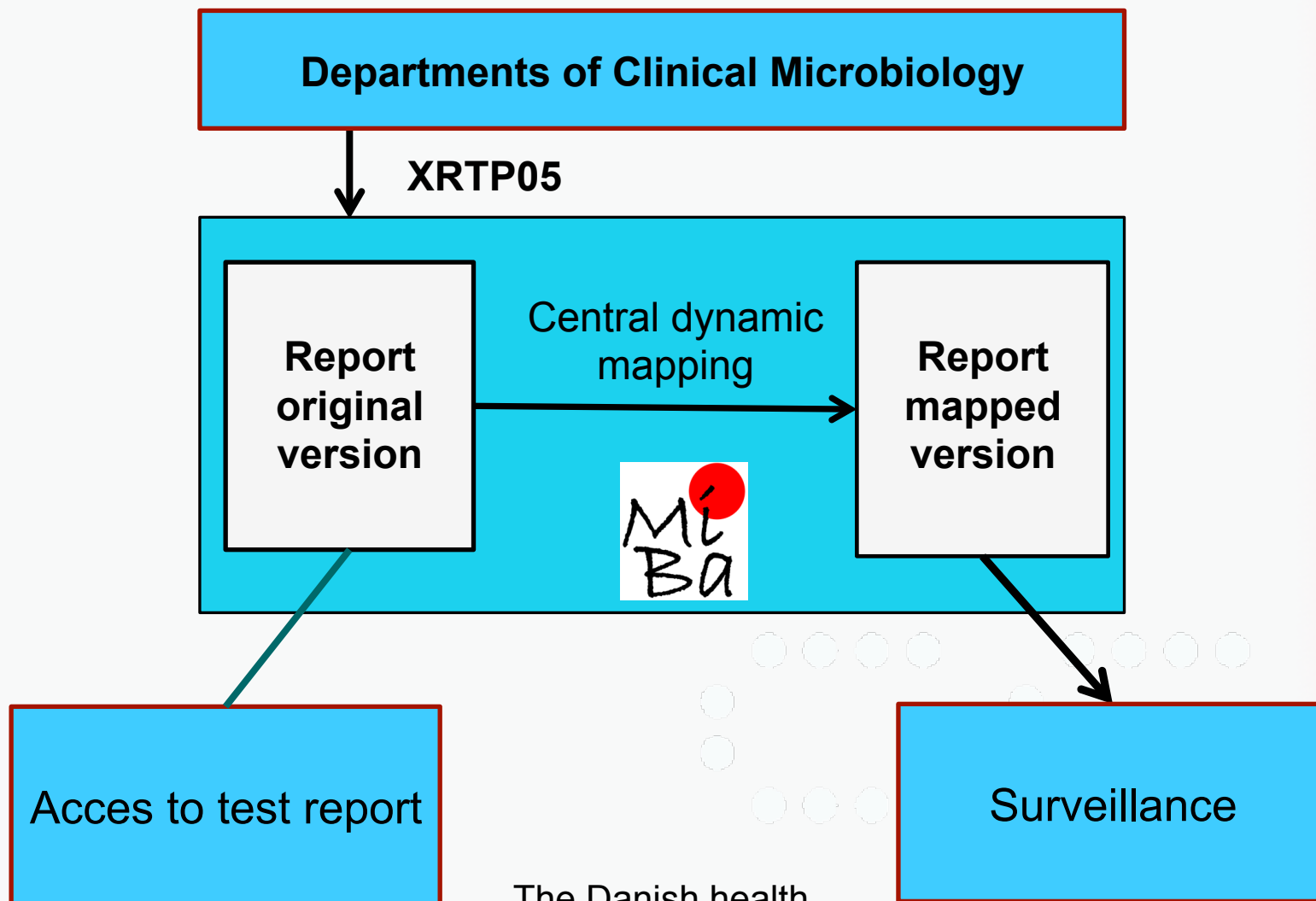




# STANDARD XML TRANSFER PROTOCOL (MEDCOM XRPT05)







The Danish health  
care network

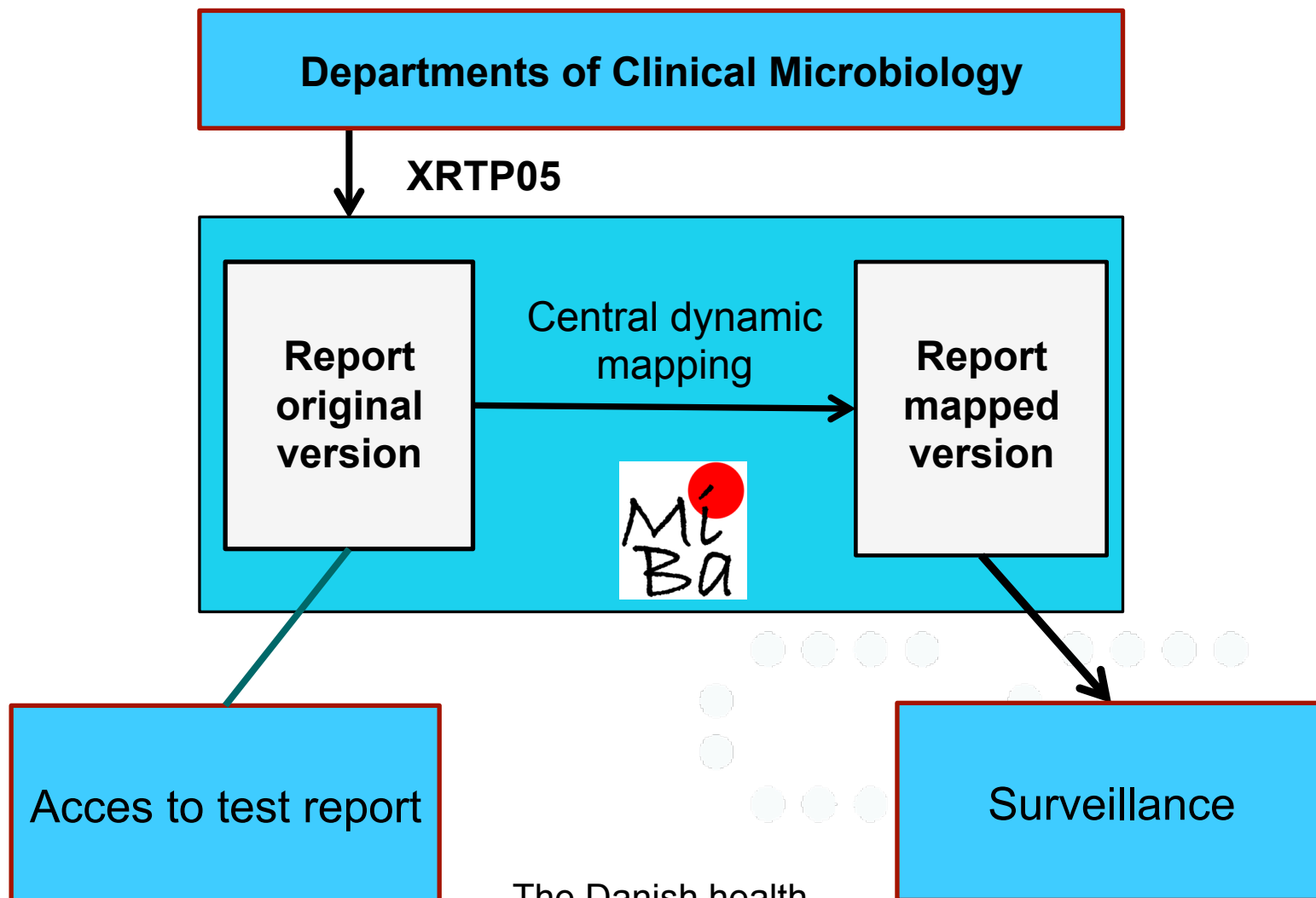
# MAIN VARIABLES IN MIBA TEST REPORTS

## Administrative data

- Patient identification / CPR-number
- Sample IDs \* National codes
- Various dates
- Requestor (hospital department or GP) **(code)\***
- Laboratory that performed the test **(code)\***
- The kind of test ordered **(code)\***
- Material examined **(code)\***
- Anatomical location of **(code)\***
- Clinical information (text)

## Results / findings

- Microorganism (findings) **(local code)**
- Antimicrobial resistance pattern **(local code)**
- Test performed (analyses) **(local code)**
- Result / interpretation of test **(local code)**
- Final evaluation or comment (text)



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\* National codes

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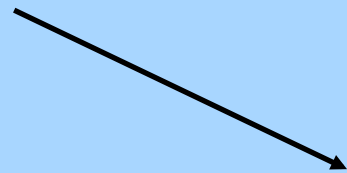
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# CENTRAL DYNAMIC MAPNING

**Skejby-Lab**  
**V. cholerae**  
**Code: 23**

**Odense -Lab**  
**Vibrio kolera**  
**Code: 42**

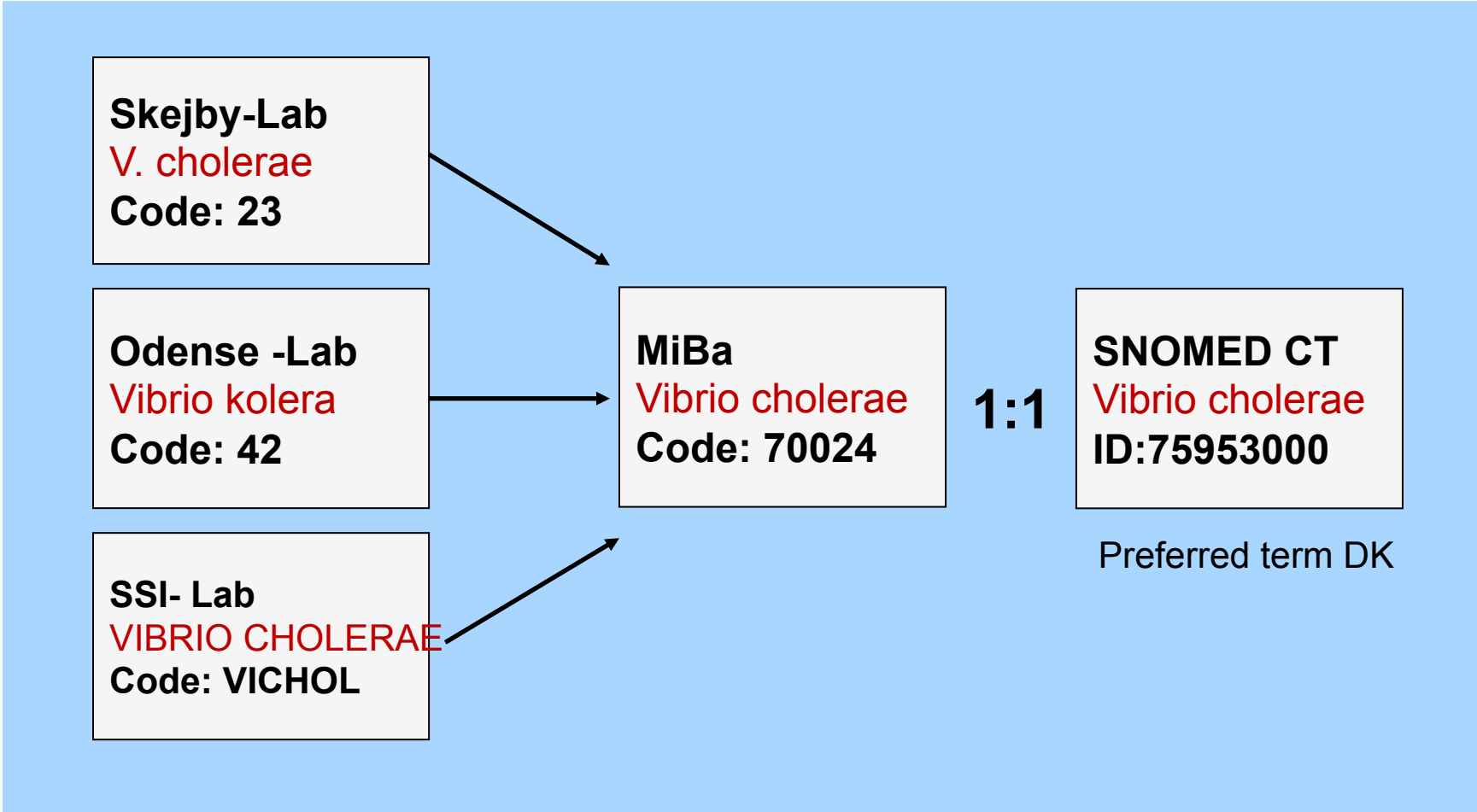
**SSI- Lab**  
**VIBRIO CHOLERAЕ**  
**Code: VICHOL**



**MiBa**  
**Vibrio cholerae**  
**Code: 10024**

Should we use SNOMED CT for the shared code?

# Same term for MiBa and SNOMED CT (preferred term)

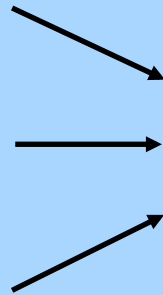




Skejby-Lab  
V. cholerae  
Code: 23

Odense -Lab  
Vibrio kolera  
Code: 42

SSI- Lab  
VIBRIO CHOLERAЕ  
Code: VICHOL



MiBa  
Vibrio cholerae  
Code: 70024

1:1

SNOMED CT  
Vibrio cholerae  
ID:75953000

7700 local terms  
accumulated in MiBa

6650 terms evaluated  
and mapped to a shared  
term

Some terms do not belong  
to this classification

1160 shared  
terms or concepts  
created in the  
MiBa classification

790 terms mapped  
to  
SNOMED CT®  
Microorganism.

# SNOMED CT® MICROORGANISM

1:1 mapping

- semi automatically and manually using a browser

- 792 MiBa mapped 1:1 to SNOMED CT
- Definitions of “Genus” >< “ X species”
- 35 new SNOMED CT concepts
- Unresolved issues:
  - Microbial properties (subtypes, genes, toxins)





- ❖ Genus Enterobacter (organism)

- Enterobacter species –  
synonym to Genus

- ❖ Genus Salmonella

- Salmonella species – child of  
Genus

Ongoing discussion in the IHTSDO community what x-species mean.

X species have been modelled in two different ways:

As a synonym to Genus X

As a child of Genus X

- ❖ The clinically important preferred terms of the microorganism sub-hierarchy in SNOMED CT have been evaluated by Danish experts in microbial taxonomy
- ❖ The microorganism sub-hierarchy was found
  - valid and up-to-date
  - suitable for implementation in MiBa as a national terminology
- ❖ A few concept's were missing (now created in the Danish extension)
- ❖ The concept of X species needed clarification
- ❖ Technical aspects of a SNOMED CT implementation will now be considered
- ❖ Other MiBa classifications will be considered for SNOMED CT mapping



# Den danske mikrobiologidatabase

[Om MiBa](#)
[Organisation](#)
[Adgang](#)
[Drift og kvalitet](#)
[Udtræk af data](#)
[Koder og tabeller](#)
[Projekter](#)

MiBa

I MiBa samles og vises  
mikrobiologiske prøvesvar fra hele landet.

MiBa er et vigtigt redskab i den nationale  
overvågning af smitsomme sygdomme  
og mikroorganismer.



## Adgang

Læs hvordan du får adgang



## Kommende møder

Få overblik over kommende møder



## Arbejdsgrupper

Læs om MiBa's arbejdsgrupper



## Genveje

[HAIBA](#)

[MiBa II](#)

[Prøvesvar fra SSI til  
Laboratorieportalen](#)

[Tekniske problemer med  
SSI-svar](#)

MIL  
BA



END